

WHAT IS CLAIMED IS:

1. A heat transport system for transporting heat energy from one or more heat sources to one or more heat sinks, the system comprising:

a condenser bank comprising one or more condensers disposed in thermal communication with corresponding ones of the one or more heat sinks;

one or more four port evaporators, each of the one or more four port evaporators being disposed in thermal communication with corresponding ones of the one or more heat sources;

a liquid return line connecting each of the one or more four port evaporators to the condenser bank;

a fluid reservoir having a liquid portion and a vapor portion, the liquid portion being coupled to be in fluid communication with the secondary liquid port of each of the one or more four port evaporators, and the vapor portion being coupled to be in fluid communication with the secondary vapor port of each of the one or more four port evaporators;

an auxiliary evaporator disposed adjacent the fluid reservoir, the auxiliary evaporator comprising:

a vapor output port, and

a fluid port in fluid communication with the fluid reservoir, with the auxiliary evaporator being disposed in thermal communication with a corresponding one of the one or more heat sources; and

a vapor line connecting the condenser bank to the vapor output port of the auxiliary evaporator and to the primary vapor ports of each of the one or more four port evaporators;

wherein each of the one or more four port evaporators comprises:

a primary liquid port coupled in fluid communication with the liquid return line,

a secondary liquid port coupled in fluid communication with the liquid portion of the fluid reservoir,

a primary vapor port coupled in fluid communication with the vapor line, and

a secondary vapor port coupled in fluid communication with the vapor portion of the fluid reservoir.

2. The heat transport system of claim 1, further comprising:

a back pressure regulator disposed in the vapor line to prevent migration of liquid into vapor spaces of the system.

3. The heat transport system of claim 1, further comprising:

one or more capillary flow regulators connected to a liquid output line of a corresponding one of the one or more condensers and being disposed between the liquid return line and its respective one of the one or more condensers.

4. A heat transport system for transporting heat energy from one or more heat sources to one or more heat sinks, the system comprising:

a condenser bank comprising one or more condensers disposed in thermal communication with corresponding ones of the one or more heat sinks;

one or more four port evaporators, each of the one or more four port evaporators comprising:

a primary wick having a core,

a primary liquid port feeding into the core via a liquid bayonet return,

a secondary liquid port,

a secondary wick providing a flow path between the secondary liquid port and the core,

a primary vapor port coupled to receive vapor exiting the primary wick, and

a secondary vapor port coupled to the core,

with each of the one or more four port evaporators being disposed in thermal communication with corresponding ones of the one or more heat sources;

a fluid reservoir having a liquid portion and a vapor portion, the liquid portion being coupled to be in fluid communication with the secondary liquid port of each of the one or more four port evaporators, and the vapor portion being coupled to be in fluid communication with the secondary vapor port of each of the one or more four port evaporators;

an auxiliary evaporator disposed adjacent the fluid reservoir, the auxiliary evaporator comprising:

a vapor output port, and

a fluid port in fluid communication with the fluid reservoir,  
with the auxiliary evaporator being disposed in thermal communication with a corresponding one of the one or more heat sources;

a liquid return line connecting the primary liquid ports of each of the one or more four port evaporators to the condenser bank; and

a vapor line connecting the condenser bank to the vapor output port of the auxiliary evaporator and to the primary vapor ports of each of the one or more four port evaporators.

5. The heat transport system of claim 4, further comprising:

a back pressure regulator disposed in the vapor line to prevent migration of liquid into vapor spaces of the system.

6. The heat transport system of claim 4, further comprising:

one or more capillary flow regulators connected to a liquid output line of a corresponding one of the one or more condensers and being disposed between the liquid return line and its respective one of the one or more condensers.

7. A four port evaporator for use in a heat transport system, the four port evaporator comprising:

a primary wick having a core;

a primary liquid port feeding into the core via a liquid bayonet return;

a secondary liquid port;

a secondary wick providing a flow path between the secondary liquid port and the core;

a primary vapor port coupled to receive vapor exiting the primary wick; and

a secondary vapor port coupled to the core.